

REMARKS

Claims 1-5 and 7-21 are now in the application. By this Amendment, claims 1, 7, 11, 13, 15, 16, and 18-20 have been amended. Support for the amendments to independent claims 1 and 18 is found at least at original claim 6. Claims 7, 11, 13, 15, 16, 19, and 20, have been amended to correct informalities but not to limit their claim scope. Claim 6 has been canceled without prejudice or disclaimer. No new matter has been added.

Claims 1-5, 7-10, 15-19, and 21 have been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,985,572 to Kitson et al.

Claim 1 recites, among other features, a process for preparing optically active hydroxy-, alkoxy-, amino-, alkyl-, aryl- or chlorine-substituted alcohols or hydroxy carboxylic acids having from 3 to 25 carbon atoms or their acid derivatives or cyclization products. At least these features of the independent claims cannot reasonably be considered to be suggested by Kitson.

As appreciated by the Examiner (please see paragraph 12), Kitson fails to suggest the above-quoted features of the independent claims. Thus, the application of Kitson under 35 U.S.C. §102(b) fails because Kitson does not suggest the combination of all of the features of claims 1 and 18. Specifically, as set forth in MPEP § 2131, to anticipate a claim, an applied citation must teach every element of the claim. “A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

In paragraph 12, the Office Action states that Kitson does not specifically teach the process for the preparation of optically active alcohols. Kitson suggests, at col. 6, lines 30-37, using glutaric acidglutaric anhydride, adipic acid, adipic anhydride, succinic acid, succinic anhydride, maleic acid and maleic anhydride. None of these compounds is optically active nor is there suggested to use optically active compounds. Thus, there is no suggestion of the above-quoted feature of claims 1 and 18.

Further, Kitson suggests, at col. 2, line 44, that ruthenium is a preferred Group VIII element to be used in the catalyst suggested therein. As such, Kitson suffers from the same deficiencies of the prior art discussed throughout Applicants's disclosure, in particular on page 2, lines 14-18, in that the use of ruthenium catalysts in the hydrogenation of carboxylic acids leads to decarbonylation of the reactants. It is one of the numerous benefits of the claimed process that decarbonylation is substantially reduced or even completely prevented. Kitson fails to recognize this disadvantage of ruthenium catalysts, and, in fact teaches away from the claimed subject matter, because this citation suggests ruthenium as a preferred catalyst material.

In addition, a catalyst used for non-optically active reactants may yield the racemic reaction product when used with optically active reactants. Kitson, as acknowledged by the Office Action, fails to suggest using optically active reactants. Thus, a skilled artisan would have no reasonable expectation of success that the catalysts disclosed therein would not lead to a racemic product when an optically active starting material is used.

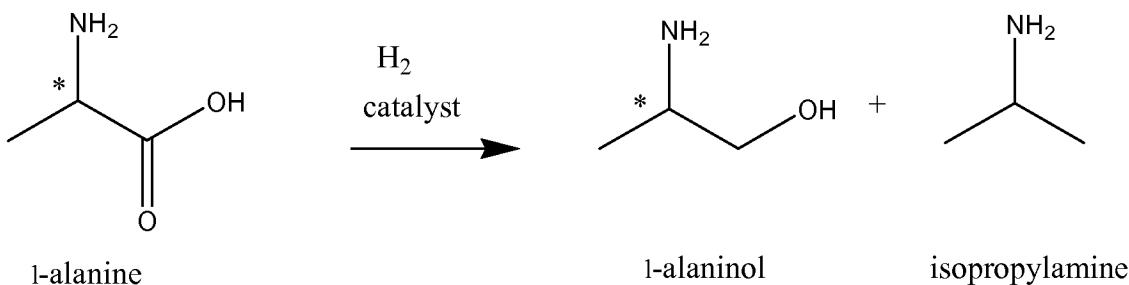
Claims 2-21 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Kitson in view of U.S. Patent No. 5,731,479 to Antons.

Antons suggests at col. 1, lines 37-38, and in claim 1, the use of ruthenium catalysts. Accordingly, Antons suffers from the same deficiencies as Kitson discussed above.

The Office Action asserts that a skilled artisan would have been motivated to use the catalyst composition suggested in Kitson with the optically active substituted alcohols suggested in Antons because this would reduce the unwanted formation of alkanes. This assertion ignores that both applied citations prefer ruthenium as a catalyst material which allows for decarbonylation resulting in unwanted alkanyl moieties instead of alcohols. Thus, the proposed modification would result in, instead of avoiding, decarbonylation, for the very reason stated in the Office Action for combining the Kitson and Antons.

In addition, even if the citations would have been combined in the manner suggested in the Office Action, a skilled artisan would not have expected the experimental results achieved by the claimed process. In particular, Applicants compared the ruthenium catalyst disclosed in Antons for the hydrogenation of optically active carboxylic acids, using the example of L-alanine, with a Pt/Sn-on carbon black catalyst as claimed. Upon request of the Examiner, Applicants will provide the following data in the form of a verified statement.

Specifically, the following hydrogenation reaction of L-alanine to L-alaninol was monitored for both catalysts and the formation of the undesired side-products isopropylamine measured:



The hydrogenation of L-alanine, as shown above, was carried out in the presence of i)Ru-black, the catalyst according to Antons, and ii) on Pr/Sn-on-carbon, which is a preferred embodiment of the claimed subject matter. Hydrogenation took place under identical reaction conditions, which are the same as example 2 of Applicants' disclosure. Specifically, hydrogenation was performed in a stainless steel autoclave at 100 °C at a hydrogen pressure of 200 bar.

The results after a hydrogenation time of 12 hours are summarized in the following table. After converting more than 99% of L-alanine to L-alaninol, no decarbonylation side reaction could be detected with the Pt/Sn-on-carbon catalyst.

| Catalyst | L-alanine (wt.-%) | L-alaninol | Conversion of L-alanine (%) | Isopropylamine (wt-%) | Selectivity of iso- propylamine (%) | Selectivity of alaninol (%) |
|---------------------|----------------------|------------|-----------------------------------|--------------------------|--|-----------------------------------|
| Ru-black | <0.005 | 2.0 | > 99 | 0.07 | 0.6 | 13.5 |
| Pt/Sn-on- carbon | < 0.005 | 3.6 | > 99 | < 0.005 | 0.0 | 24.3 |

Remarkably and unexpectedly, the claimed process reduces the unwanted formation of isopropylamine to under 0.005 wt.-%.

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Applicants concurrently herewith submit the requisite fee for a Petition for a three-month Extension of Time. Applicants believe no additional fee is due with this response. However, if any additional fee is due, please charge our Deposit Account No. 22-0185, under Order No. 12810-00340-US1 from which the undersigned is authorized to draw.

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Respectfully submitted,

Electronic signature: /Georg M. Hasselmann/
Georg M. Hasselmann
Registration No.: 62,324
CONNOLLY BOVE LODGE & HUTZ LLP
1875 Eye Street, NW
Suite 1100
Washington, DC 20006
(202) 331-7111
(202) 293-6229 (Fax)
Attorney for Applicants